Customer No.: 31561
Docket No.: 12302-US-PA
Application No.: 10/708,851

REMARKS

Present Status of the Application

Claim 1 is rejected under 35 U.S.C 103 (a) as being unpatentable over the admitted prior art Figs. 1-2B discussed in the background of the instant application in view of Kim et al (US Pat. 6,822,691, Kim hereinafter). Claims 1-9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 10/708,875.

In response thereto, the applicants submit an executed terminal disclaimer to overcome the double patenting rejection. The applicants respectfully amend Claim 1 by incorporating with all limitations of claim 2. After entering the amendment, Claims 1, 3-9 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of the claim rejection under 35 USC 103

The Office Action rejected Claim 1 under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (AAPA) Figs. 1-2B discussed in the background of the instant application in view of Kim reference. The applicants respectfully traverse the above rejections for the reasons as set forth below.

With respect to claim 1, as amended, recites in part:

> A method of motion detection for a 3D comb filter video decoder, the method comprising:
>
> .....

judging whether the composite video signal to be a motion state or a still state, according to the sampling data of $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$, comprising:

using the sampling data of $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to *calculate and obtain a plurality of maximum differences $MD_{x,y}$, wherein $MD_{x,y}$ represents the maximum difference for the y^{th} pixel in the x^{th} line*;

selecting the maximum differences for any adjacent four pixels to take an average, for obtaining a plurality of motion factors $MF_{x,y}$, wherein $MF_{x,y}$ represents the motion factor for the y^{th} pixel in the x^{th} line; and

detecting the motion factor $MF_{x,y}$ to judge whether the composite video signal to be the motion state or the still state

Applicants submit that neither **AAPA**, nor **Kim** has taught, disclosed, or suggested "using the sampling data of $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to calculate and obtain a plurality of maximum differences $MD_{x,y}$, wherein $MD_{x,y}$ represents the maximum difference for the y^{th} pixel in the x^{th} line" and "selecting the maximum differences for any adjacent four pixels to take an average, for obtaining a plurality of motion factors $MF_{x,y}$" as required by claim 1.

As disclosed in Fig. 2A of **AAPA**, because the motion detector 230 receives the sampling data F_{m+1} and receives the output "separated video signal 221"of the inter-field Y/C Separator 220, which performs Y/C separation upon the received sampling data F_m, the motion detector 230 does not judge the state of the composite video signal according to the sampling data of the composite video signal. The inter-field Y/C separator 220 offers the

separating signal to the motion detector 230 but does not offer the sampling data of the composite video signal to the motion detector 230.

Furthermore, the Office Action relies on the Fig.3 of **Kim** reference to remedy the deficiency of the **AAPA** that it is known in the art to use more consecutive frames to obtain more precise motion detection. Applicants do not agree with the assertions and respectfully traverse the rejections by the following reasons.

The **Kim** reference relates to a method of detecting motion in an interlaced video sequence utilizing region by region motion information and apparatus for motion detection. As disclosed in Summary of the Invention, it states that "....provide a motion detection method **in interlaced video**, ... which provides for a robust method of estimating a motion decision parameter which is associated with the point to point degree of motion in the interlaced video sequence." As also disclosed in Abstract, it states that "The motion detection is particularly applicable **in the conversion from interlaced video to progressive video**."

The Fig.3 of **Kim** reference, upon which the Office Action relied, discloses an interpolation operation for $x_n(i,h)$ between t=n-1 and t=n+1, as followed:

> The importance or the usefulness of estimating $m_n(i,h)$ can be easily understood from FIGS. 2 and 3. Suppose that precise motion detection information is available when we interpolate $x_n(i,h)$ and suppose there is no motion at the spatial location (i,h), then the best interpolation for $x_n(i,h)$ is to use the value of $x_{n-1}(i,h)$. This follows logically from the fact that no motion is introduced between t=n-1 and t=n+1 at the spatial location (i,h), which very strongly implies that the value of $x_n(i,h)$ would be close to the value of $x_{n-1}(i,h)$.

The usage of the motion decision parameter of the present invention is also to utilize the motion information for deinterlacing to properly mix the temporal information. (Col.7, Lines 44-56, Kim)

Therefore, the **Kim** reference discloses a method of detecting motion in an interlaced video sequence, which does not teach or suggest use more consecutive four frames to obtain more precise motion detection.

Furthermore, the "judging whether the composite video signal to be a motion state or a still state, according to the sampling data of $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$" as claimed is not the notoriously well known in the art to use more consecutive four frames to obtain more precise motion detection. When the composite video signal is decoded by the **3D comb filter**, the composite video signal is sampled by every 90 degrees of the phase angle. As in NTSC system, when the sampling phases are at 0, 0.5π, π, and 1.5π, respectively. The consecutive four frames is particularly designed by the invention for the composite video signal decoded by the **3D comb filter**, and further "using the sampling data of $F_{m+1}P_{x,y}$, $F_mP_{x,y}$, $F_{m-1}P_{x,y}$, and $F_{m-2}P_{x,y}$ to calculate and obtain a plurality of maximum differences $MD_{x,y}$, wherein $MD_{x,y}$ represents the maximum difference for the y^{th} pixel in the x^{th} line" and "selecting the maximum differences for any adjacent four pixels to take an average, for obtaining a plurality of motion factors $MF_{x,y}$," which are not obvious to a person of ordinary skill in the art at the time the invention was made.

Independent claim 1 is allowable for at least the reason that the combination of AAPA in view of the **Kim** reference does not disclose, teach, or suggest the features that are

highlighted in claim 1 above and the rejection should be withdrawn.

Because independent claim 1 is allowable over the prior art of record, its dependent claims 3-9 are allowable as a matter of law, for at least the reason that these dependent claims contain all features/elements/steps of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Discussion of the double patenting rejection

Claims 1-9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 10/708,875. In response thereto, a terminal disclaimer signed by the undersigned is submitted to overcome the double patenting rejection.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1, 3-9 are in proper condition for allowance and an action to such effect is earnestly solicited. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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